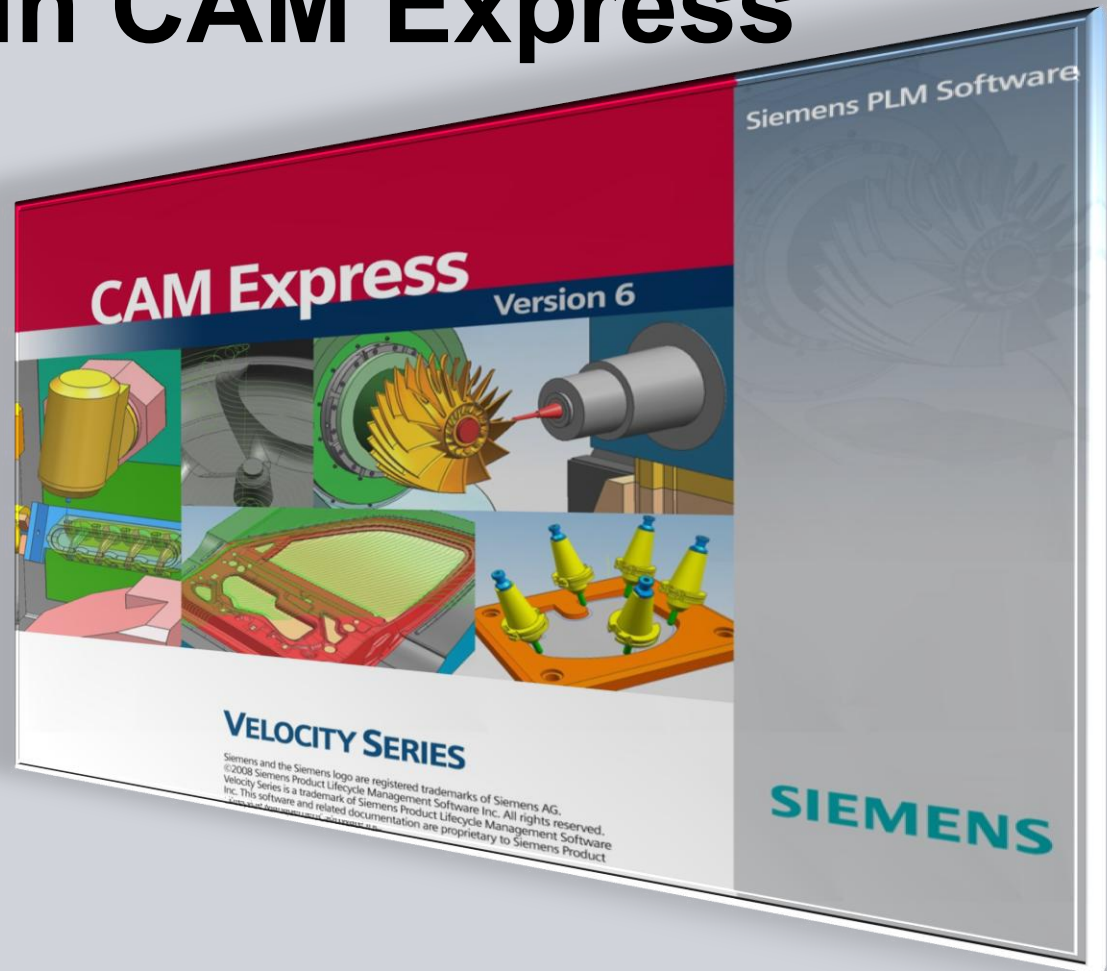


What's New in CAM Express Version 6

Mark Rief
Product Manager

June 2008



This presentation will review what's new in Version 6 of CAM Express.

We will focus on usability, including Operation Navigator enhancements, copy and paste between parts, role driven configurations, and more tutorials. We will look at several improvements in tool interaction, such as dynamic solid display and cutcom and adjust registers in pockets. We will see how the new CAD toolbox provides essential CAD functions for NC programmers.

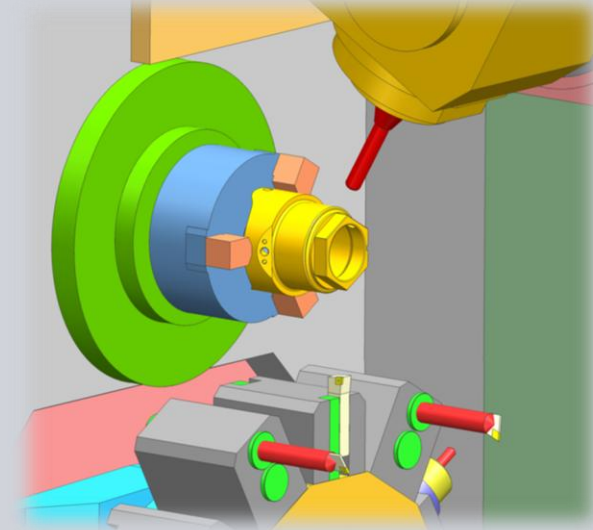
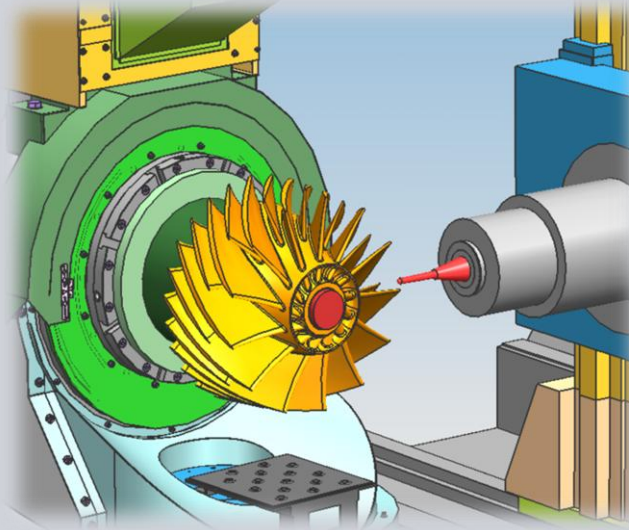
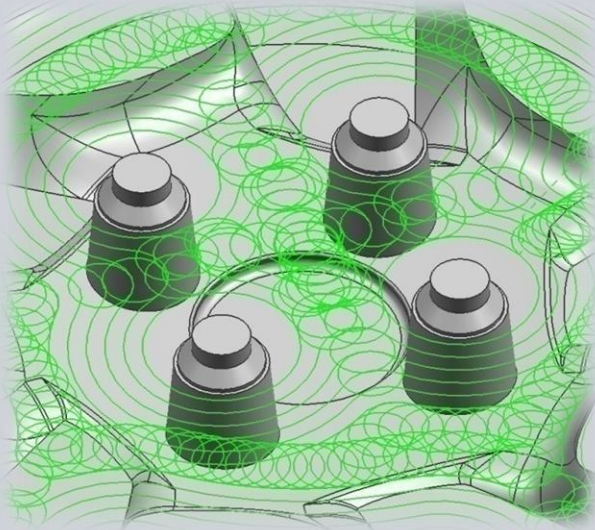
Details on functional enhancements to tool paths can be found in the NX CAM track.

What is CAM Express?

The CAM component of the Velocity Series portfolio

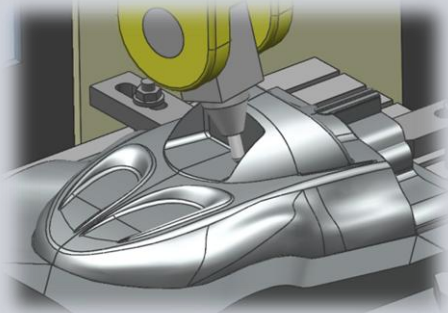
- Designed for New Users
- Designed for Small-to-Medium sized Business Market (SMB)
- Includes Pre-Configured Environments for Typical Situations
- Solid Edge Connection for Data Transfer
- Tutorials to Speed Productivity
- Grows with you

Siemens PLM Software as a CAM vendor



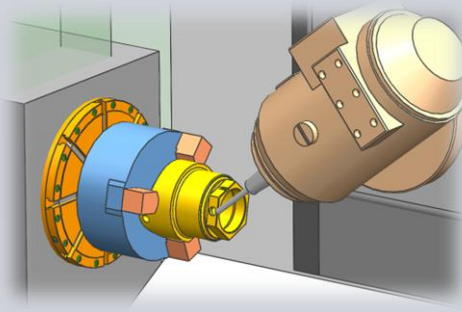
- Over 30 years of market success
- Industry leader with approx. 14% market share
- Over 35,000 installed seats worldwide
- Outstanding product reputation with “NX CAM”
- Wide range of machining capability
- Global Presence

CAM Express – Wide Market Coverage



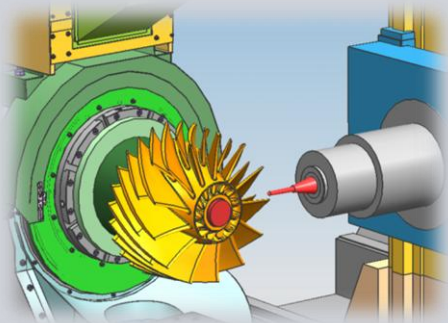
3 Axis Machining

- High Speed Machining
- Tooling for Consumer Products
- Tooling for Automotive



Multi-function Machining

- Prismatic components
- Machine Tools
- Automotive Power Train



Complex Machining

- Aerospace & Defense
- Medical Devices
- Power Generation

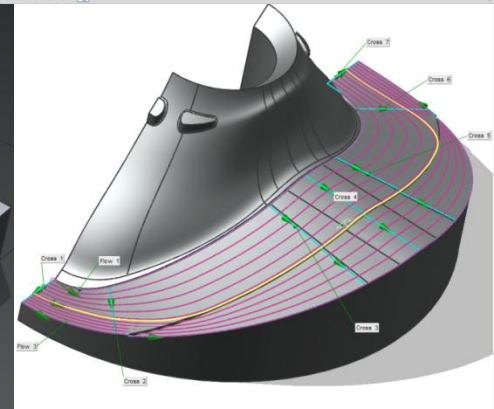
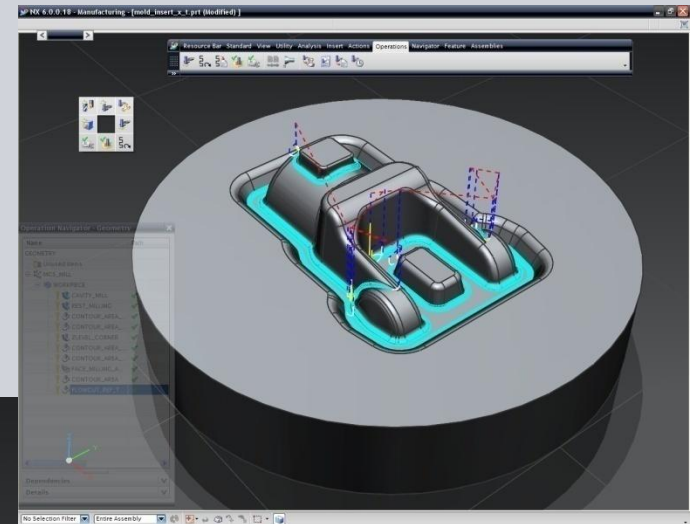
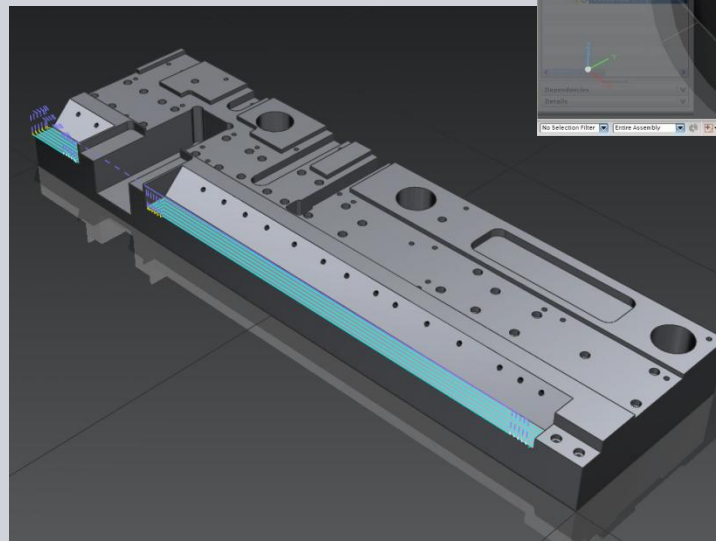
CAM Express Version 6

What's new

SIEMENS

- Improved User Experience
- More Efficient 3 Axis Milling
- New Feature Based Machining from Tecnomatix

“Improve performance with faster, smoother cutting strategies and enhanced feature recognition.”

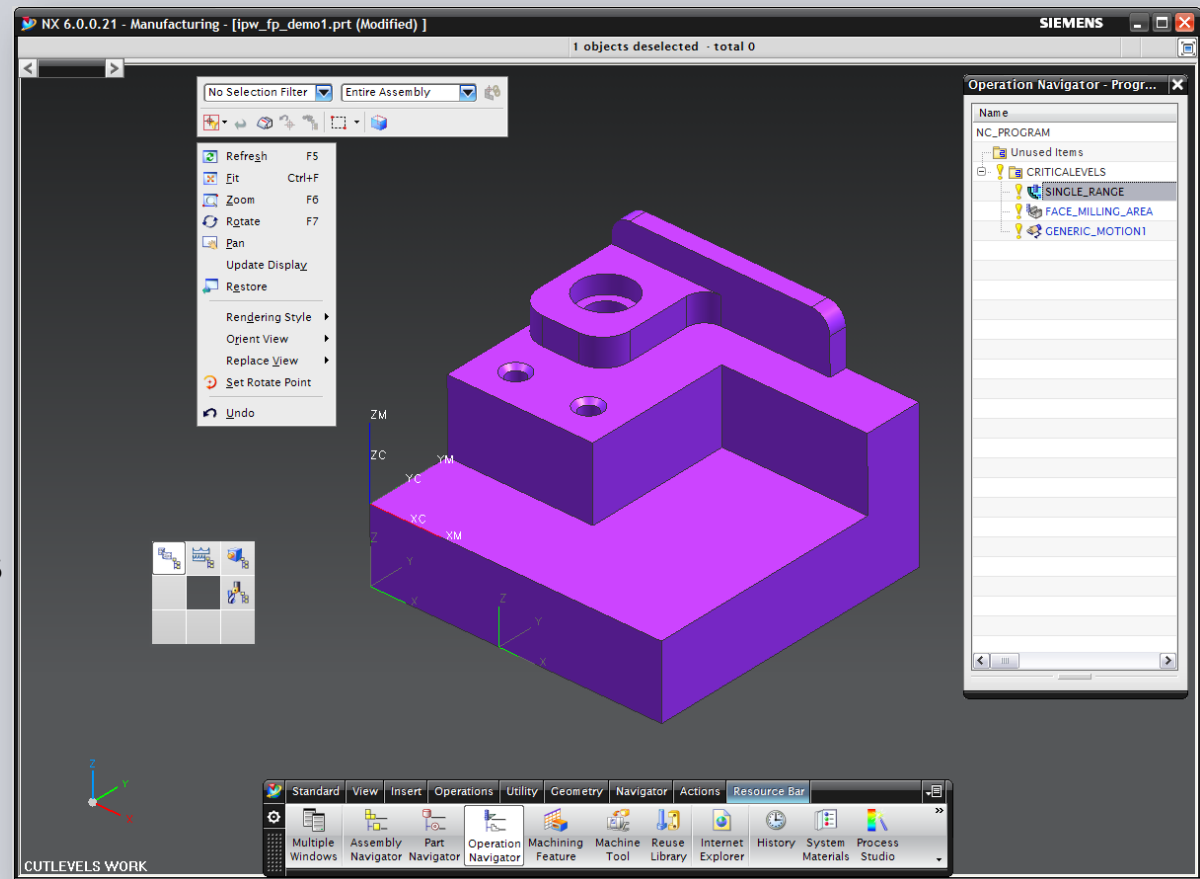


User Environment Enhancements

Visual Design Acceleration



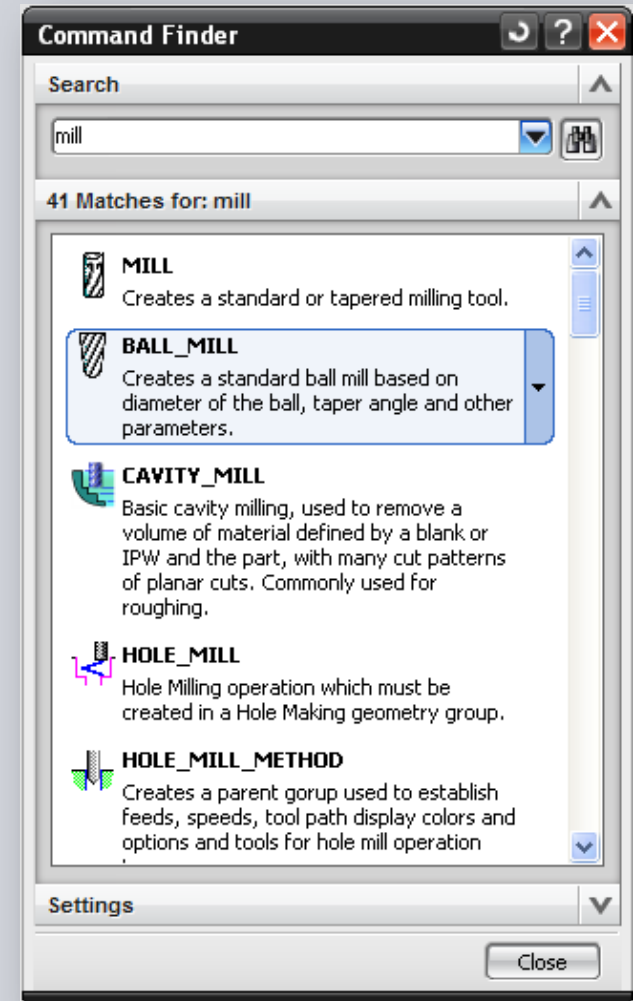
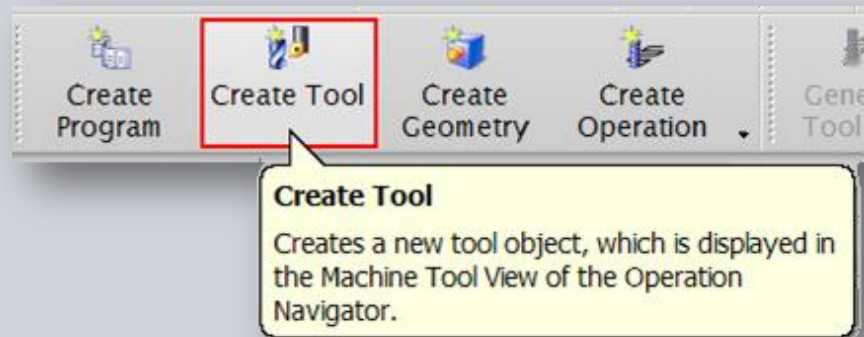
- Full Screen Mode
 - Toolbar Manager
- Mini Selection Bar
- Customizable Radial Toolbar
- New color table
 - Colors close to NX 5
 - CAM Setup Assemblies use darker background
- Movie Toolbar



Command Finder

CAM Content

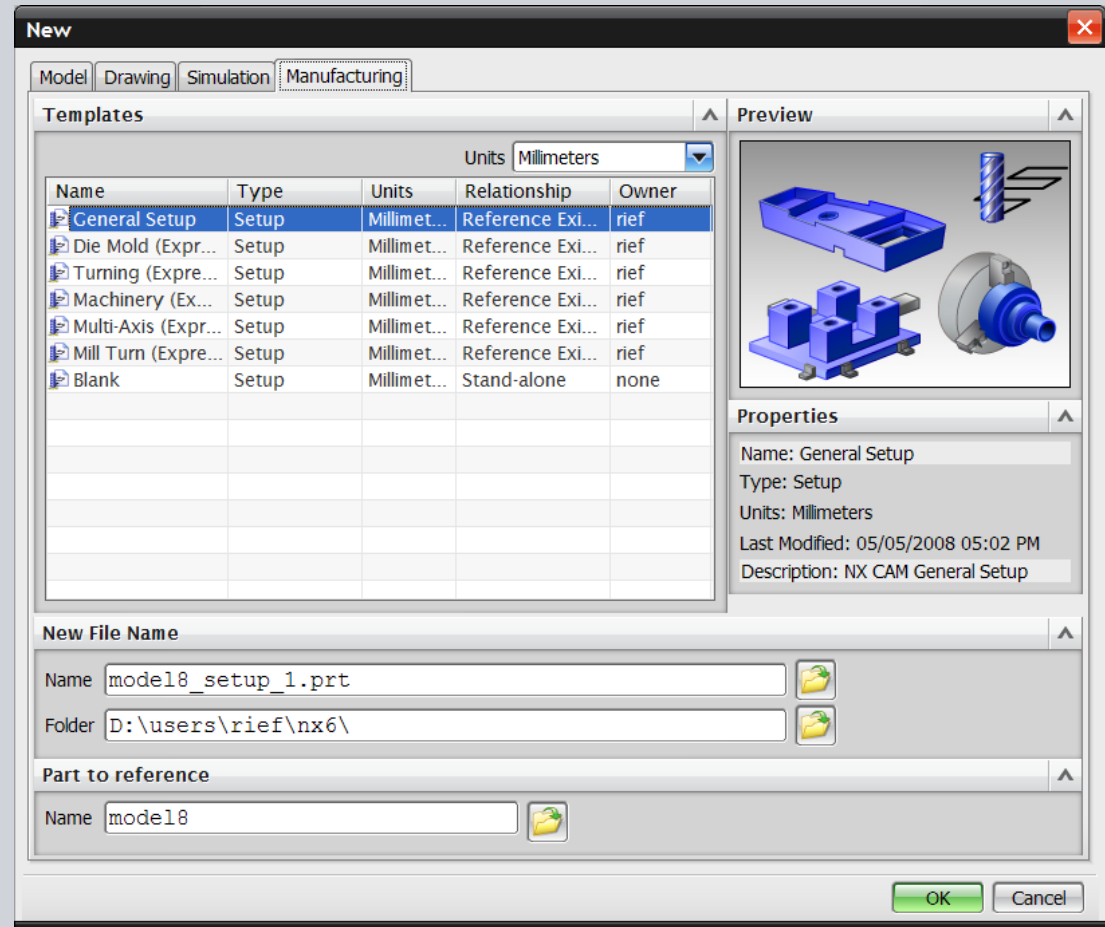
- CAM Menu entries
- CAM Template subtypes
 - Descriptions of all Operations, Tools, Geometry groups, Methods, Programs



File → New

Manufacturing Templates

- Recommended way to create a setup
- Creates assembly
- Same functionality as Setup Library and CAM Express Palette
- Consistent with Drafting
- Enforces Master Model
- Customer default for naming convention



Operation Navigator

Copy and Paste Operations Between Parts



- Voted #1 ER last year
- Copy Operations only
- Paste only in geometry view
- Determining the four parents
 - Geometry
 - From the paste selection
 - Program, Tool, Method
 - Same as template load with parent
 - If a matching parent found, it is used
 - If not found, it is created

Operation Navigator

Display Selection

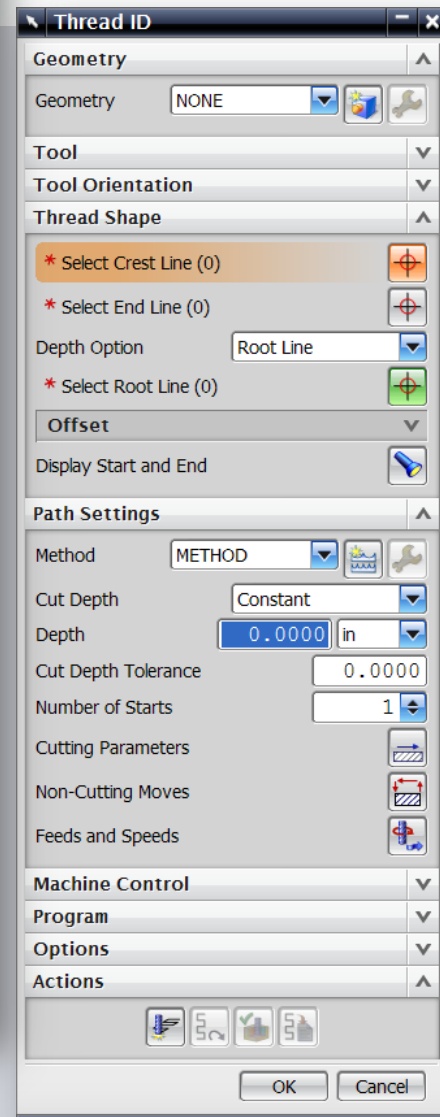
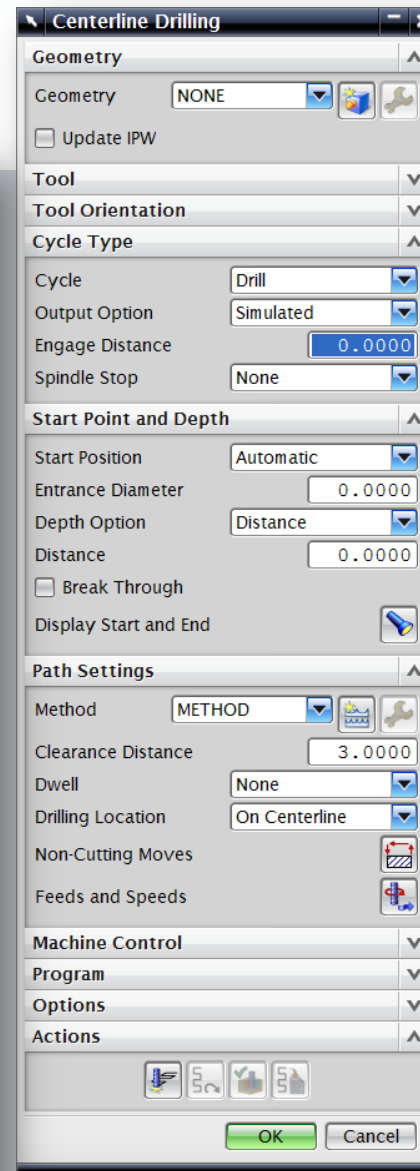
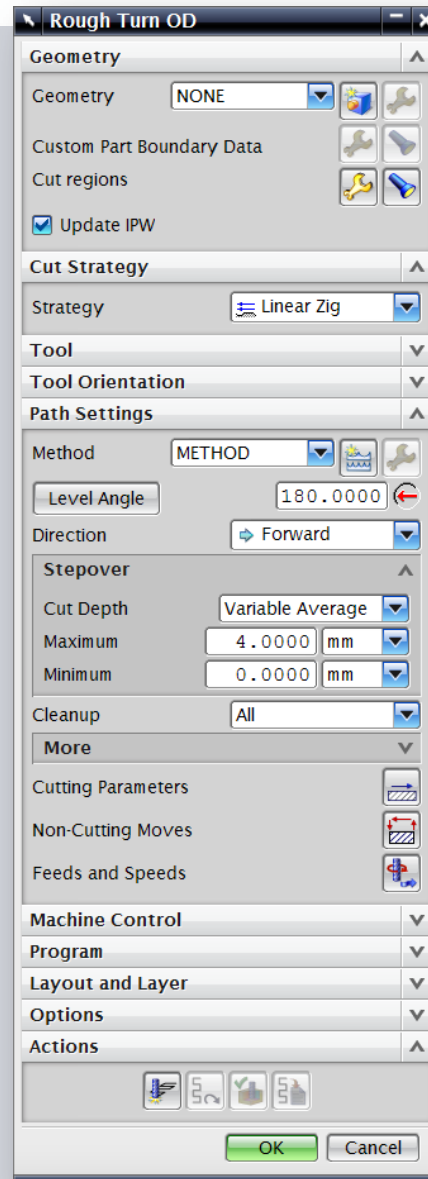


- Objects highlight in graphics screen when they are selected in the Navigator
 - Tool path and geometry for operations
 - IPW for turning operations
 - Solid tool preview for tools
 - Selected geometry for geometry groups
- Consistent with Part and Assembly Navigators
- Quick way to browse through a part
- Displaying of multiple selected objects is supported for operations
 - For mixed selections of objects the display will be cleared
 - Turning IPW only for single selection
- Display of objects and turning IPW can be turned off in Preferences or Customer Defaults

Dialogs

Turning Operations

- Consistent with Milling
- Common Groups
- Common Blocks
 - Parent Selection
 - Geometry
 - Stepover

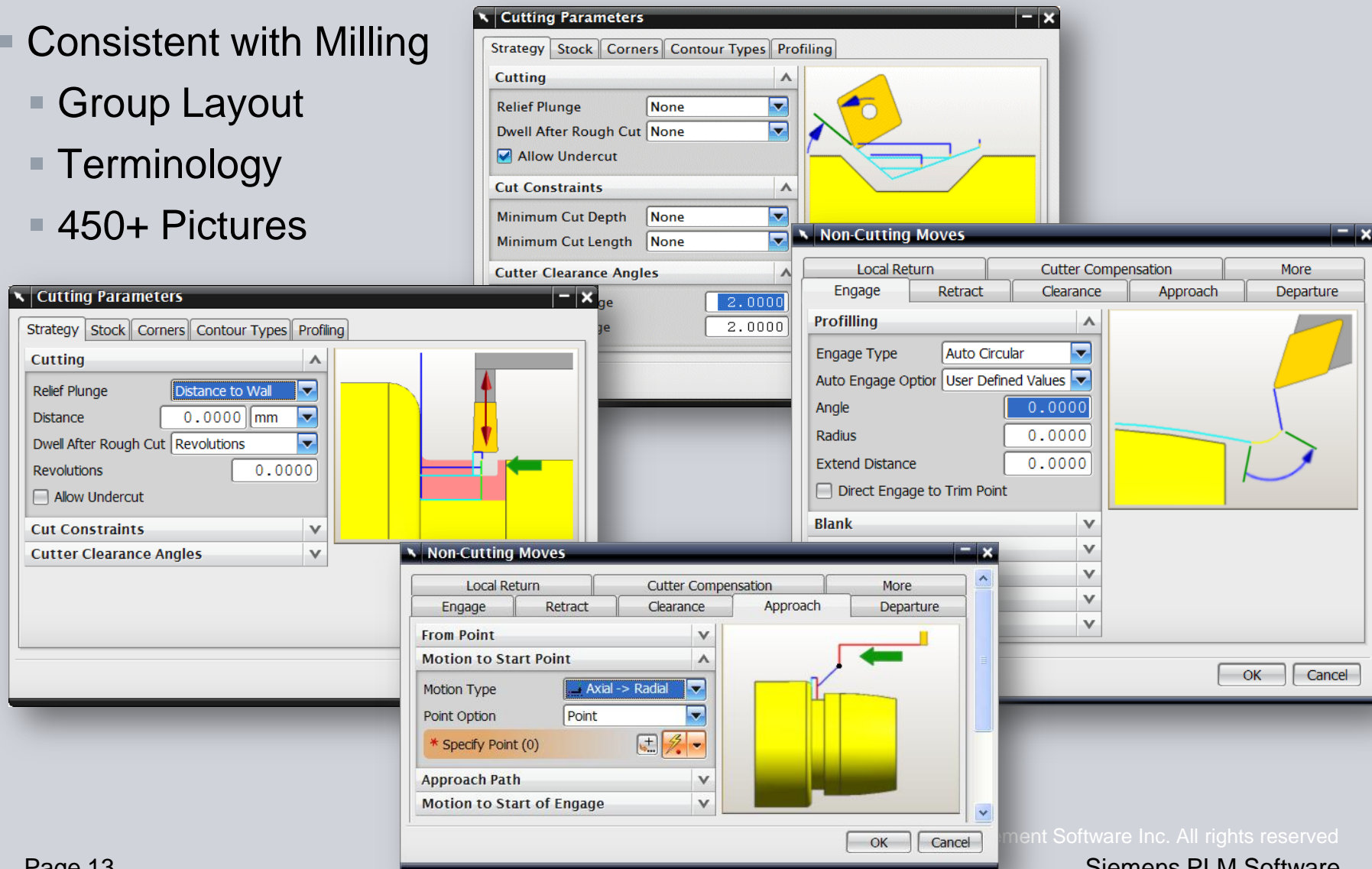


SIEMENS

Dialogs

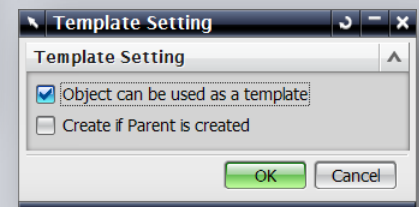
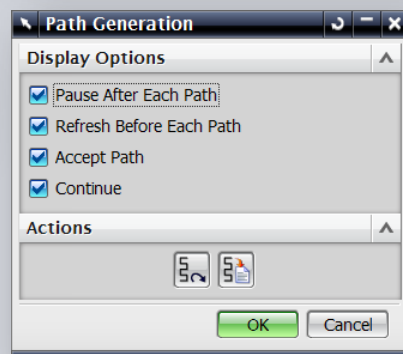
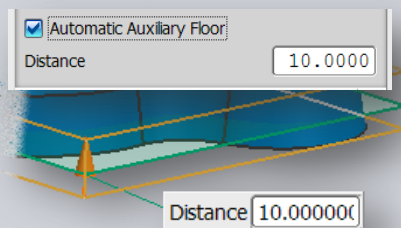
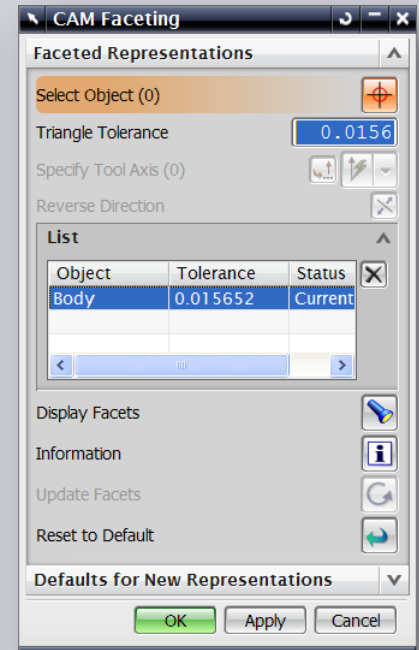
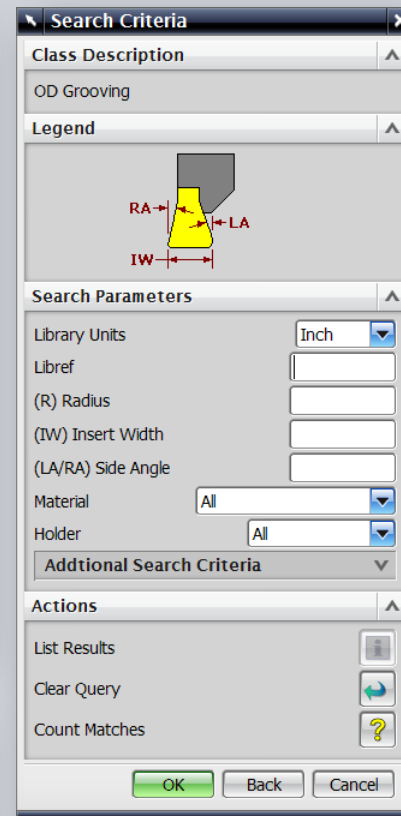
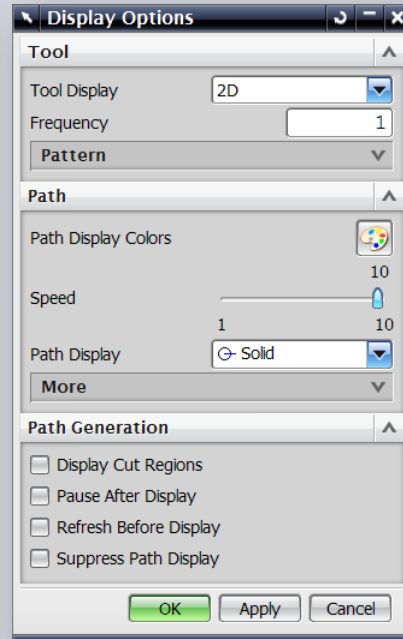
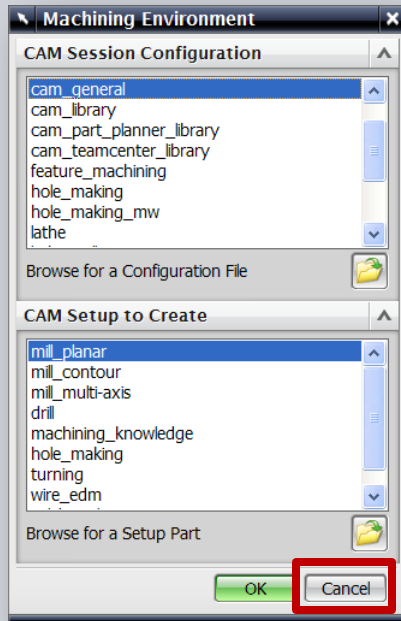
Turning Cutting and Non Cutting

- Consistent with Milling
 - Group Layout
 - Terminology
 - 450+ Pictures



Dialogs

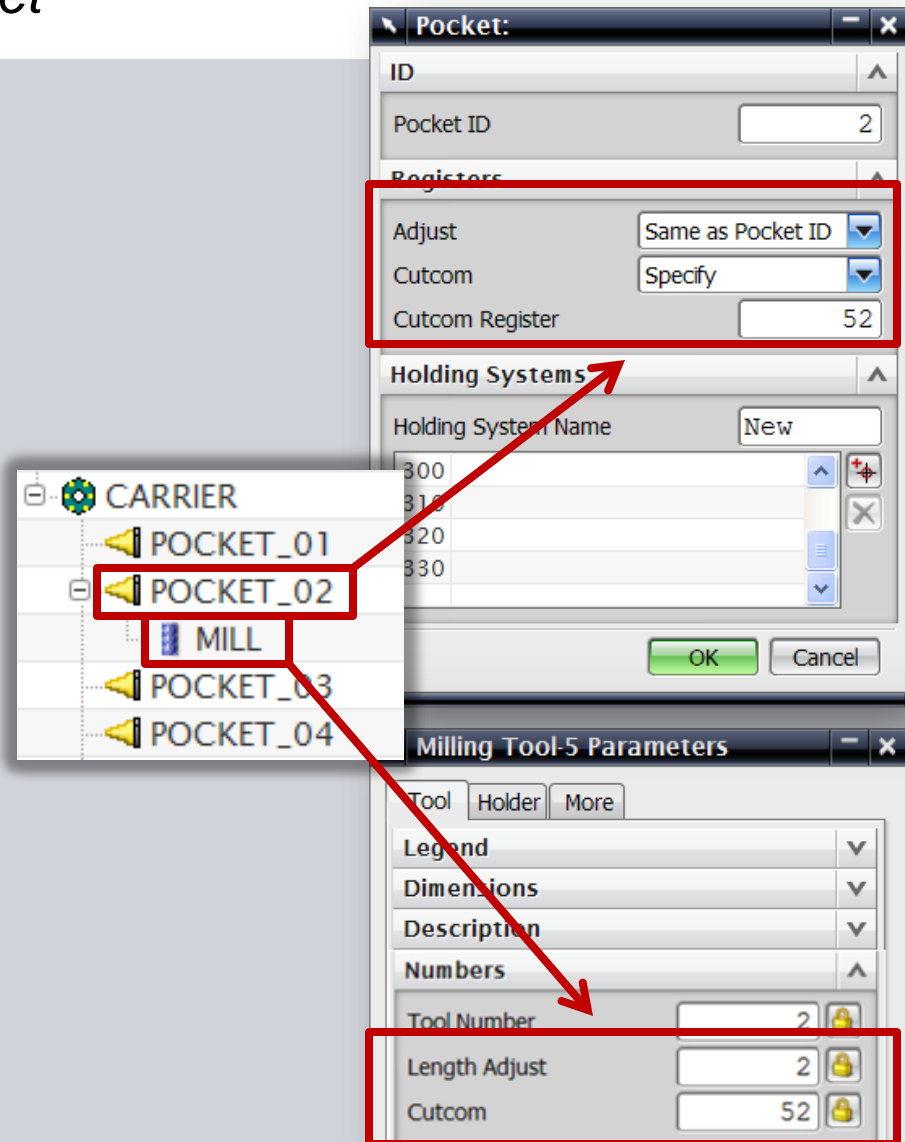
Continue the New Look



Tools

Cutcom and Adjust from the Pocket

- Cutcom and Adjust registers
 - Inherited from the pocket to the tool
 - Can be set to match the pocket ID
- New tools and pockets will inherit
- In legacy parts, the inheritance is off if registers are set in the tool
- Inheritance from Tool to Operation is unchanged
- Not used with tracking points
- Pocket Dialog also includes holding system

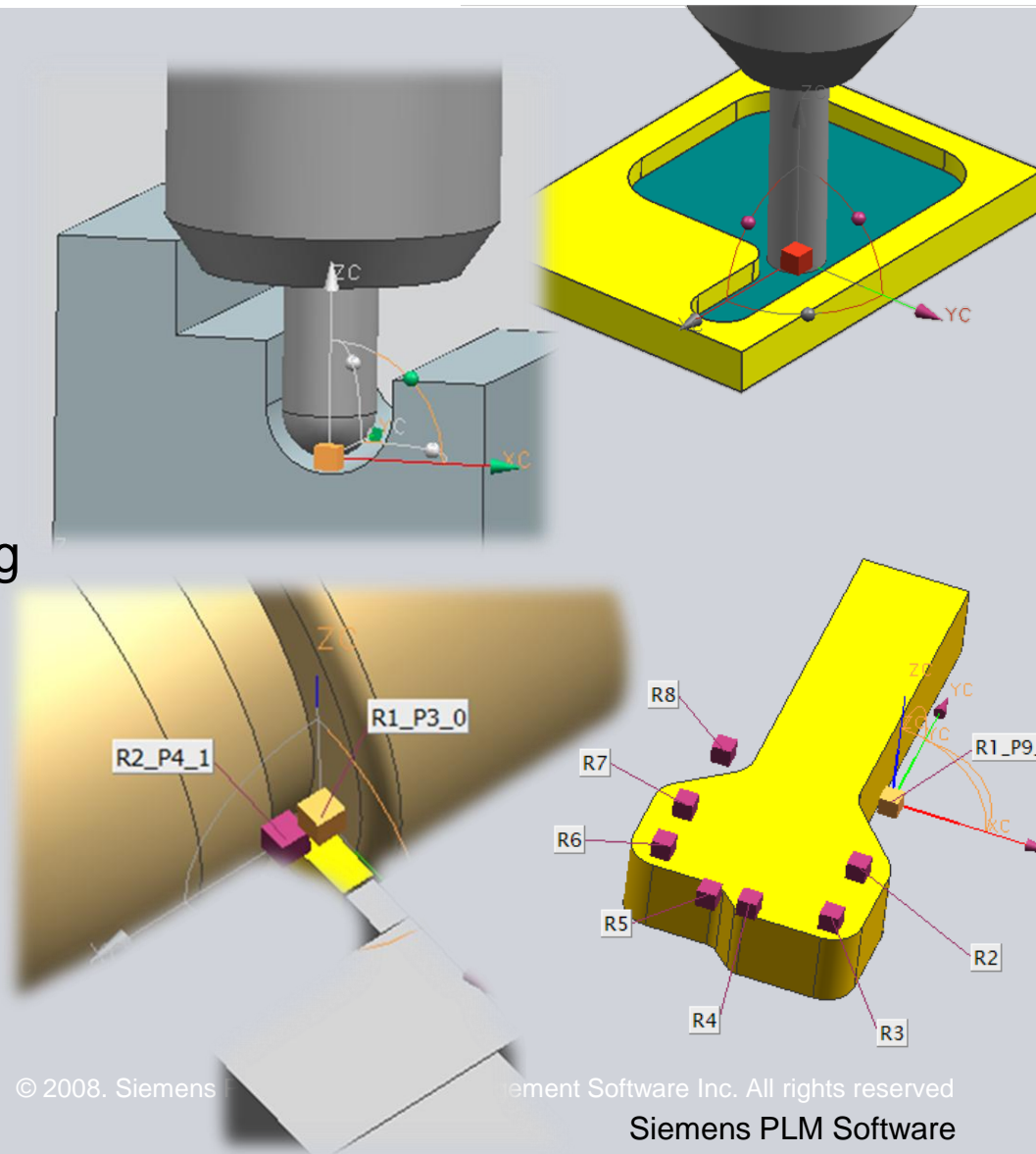


Tools

Dynamic Preview Display

- Tool is displayed as true solid
- Tracking points in 3D with labels
- Pan/Zoom/Rotate the view
- Handles to move and rotate the tool
 - Validate parameters in dialog
 - Compare tool to part and fixtures - Will it fit?
- Initial display on the screen

SIEMENS

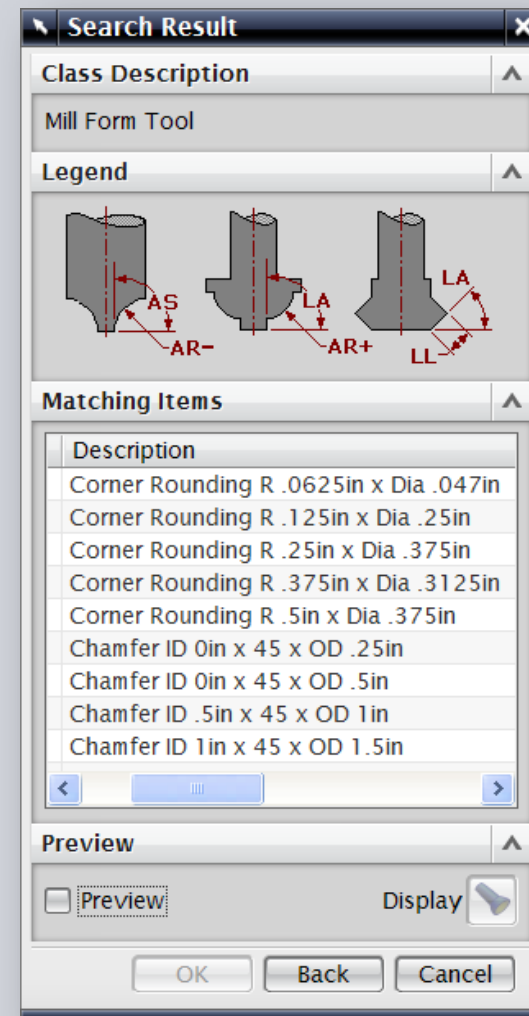
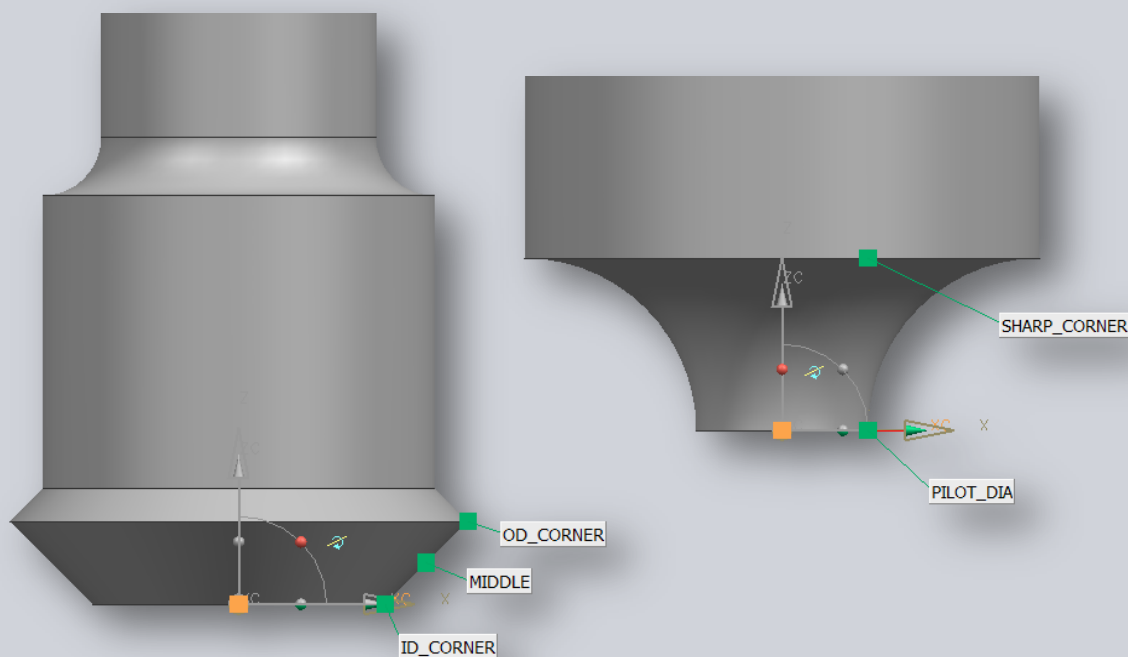


Tool Library Content

User Defined Milling Tools

Sample User Defined Milling Tools in the Library

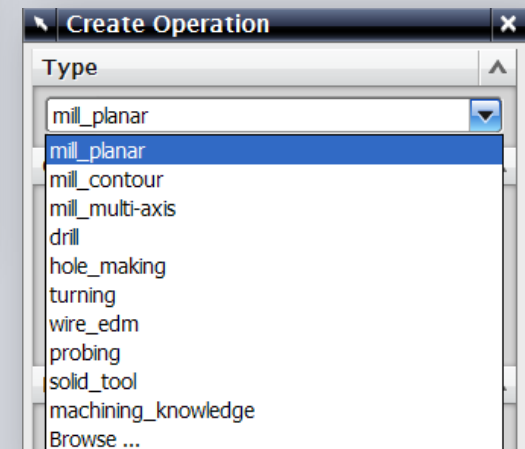
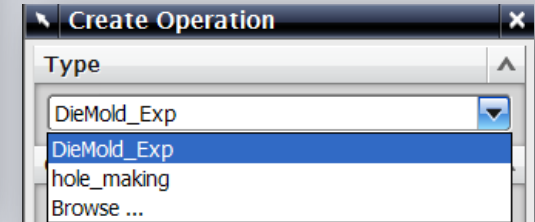
- Corner rounding
- Chamfer tools
- Meaningful tracking points



CAM Express

Roles

- CAM Configuration is saved in the role
 - Native or Managed
- Changing the role changes the configuration
 - No need to go to Gateway
 - No need to reset in preferences
 - Controlled in Customer Defaults

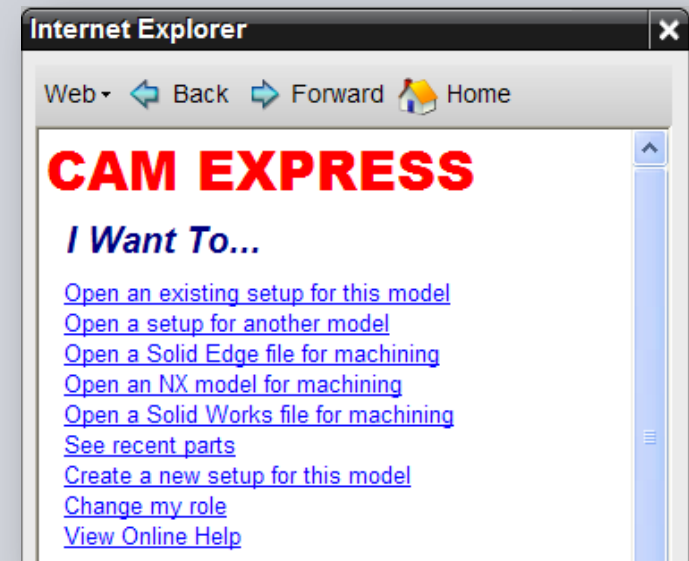


CAM Express

Welcome Screen (Home Page)



- Clearer links
- Open Solid Works files
- Better spacing in localized languages
- Opening Part Files
 - Customizable with pax file name
 - CAM_TU_<part_name>.pax
 - CAM_TU_ASSEM_<part_name>.pax
 - Parts must be in mach\tutorials\parts
 - You can create a link that opens a part



CAM Express

New Tutorials

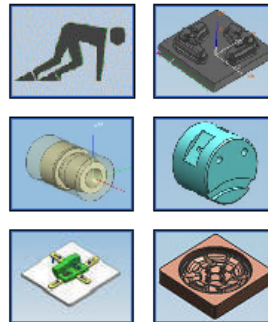
SIEMENS

- Aerospace
 - 5 Axis bulkhead
- Mold Rework
 - Modify existing program
 - Localized machining
- High Speed Milling
 - Latest best practices
 - Machining data library
- Postprocessor
 - Download from the library
 - Install
 - Edit with Post Builder

Teach Me About... Aerospace Machining

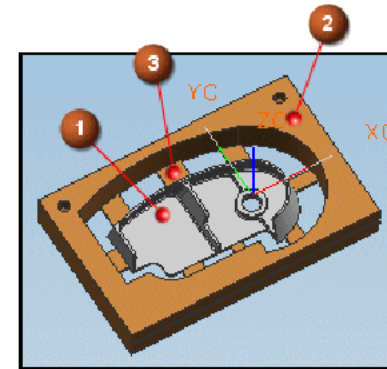
This tutorial steps you through the process of creating multi-axis tool paths on an aerospace part. You will create CONTOUR_PROFILE operations, controlling the tool axis as it finishes undercut walls. The intent is for you to achieve a basic working knowledge of the CONTOUR_PROFILE operation within the context of a machining workflow and to become an independent, self-sufficient user and easily as possible.

Difficulty: Advanced
Estimated time: 45 minutes



5-Axis Bulkhead Machining

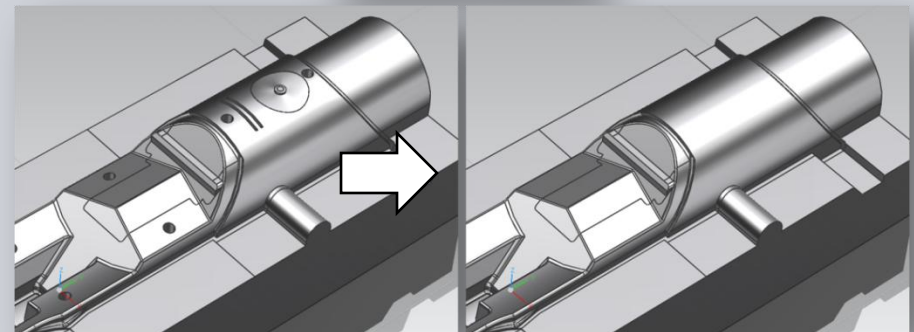
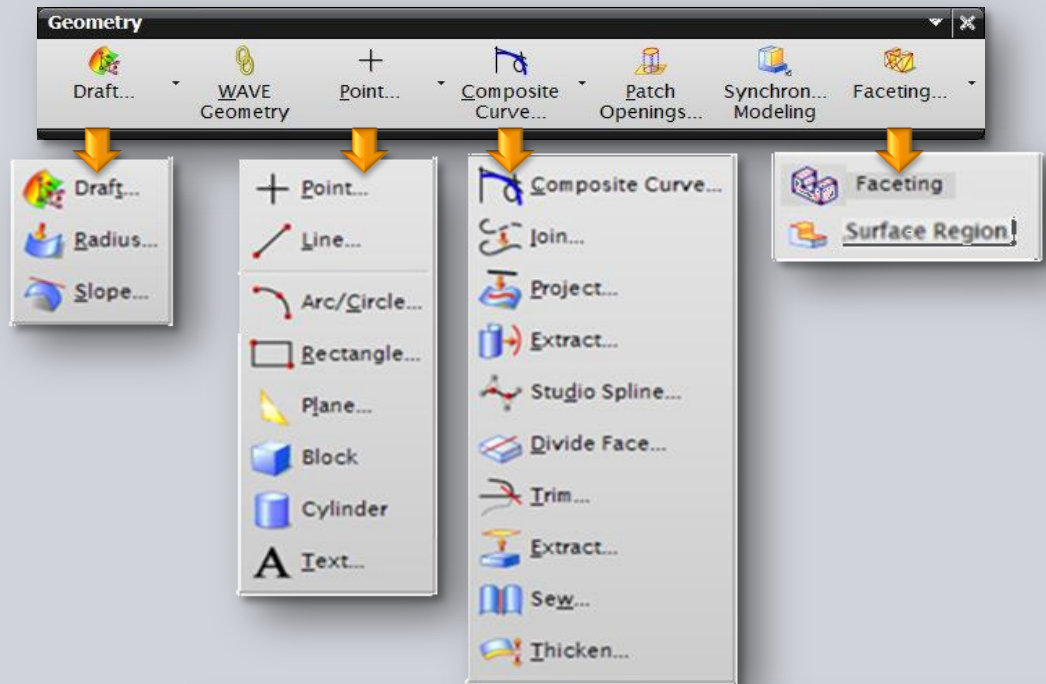
In Aerospace work, it is common to machine smaller parts in a window-frame fashion. Using this technique, the part (1) is positioned within a block of material (2) with tabs (3) left in place to secure the part during machining.



This tutorial steps you through the process of machining a bulkhead. The intent is for you to acquire a basic working knowledge of 3 and 5-axis programming techniques within the context of a bulkhead machining workflow.

CAM Geometry Tool Bar

- CAD Toolbox
- Provide essential CAD editing tools to the CAM user
- Move existing geometry functions to one location
- Access from within Manufacturing
- Add Model editing for machining
 - Synchronous Modeling
 - Patch openings



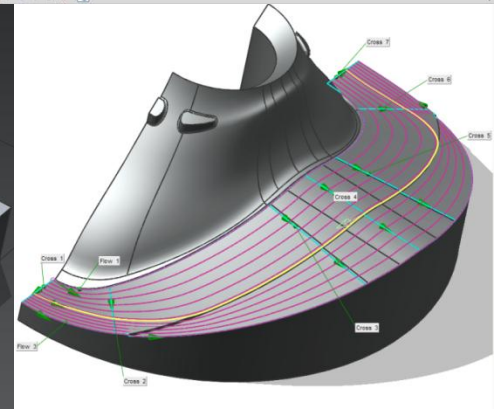
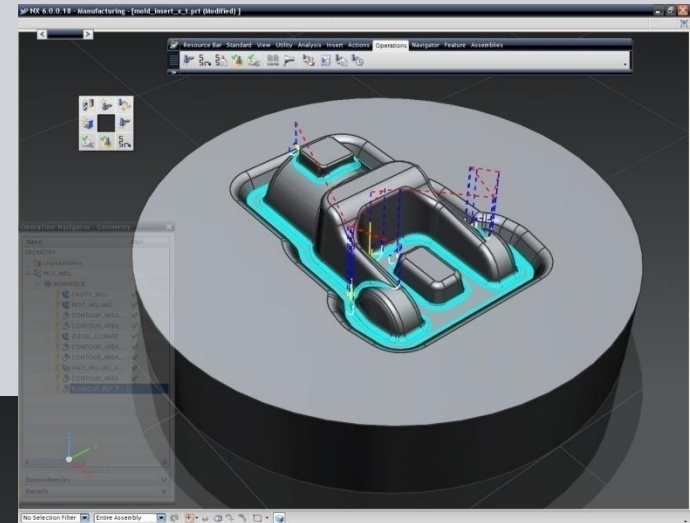
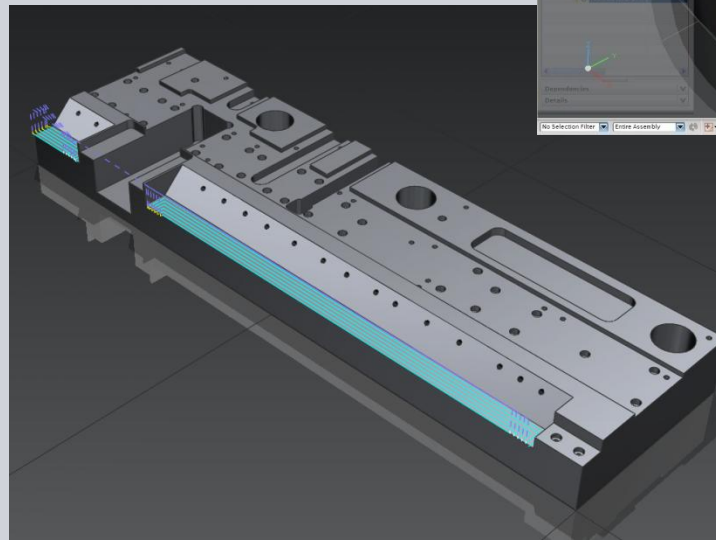
CAM Express Version 6

What's new

SIEMENS

- Improved User Experience
- More Efficient 3 Axis Milling
- New Feature Based Machining from Tecnomatix

“Improve performance with faster, smoother cutting strategies and enhanced feature recognition.”



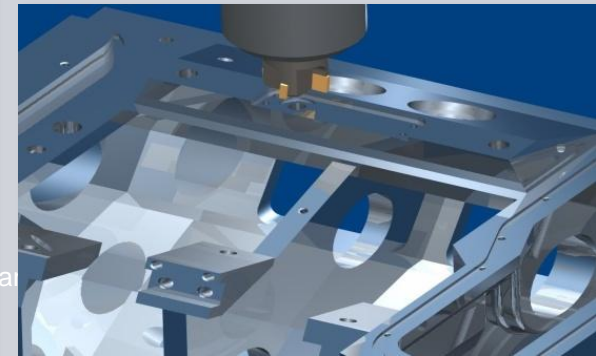
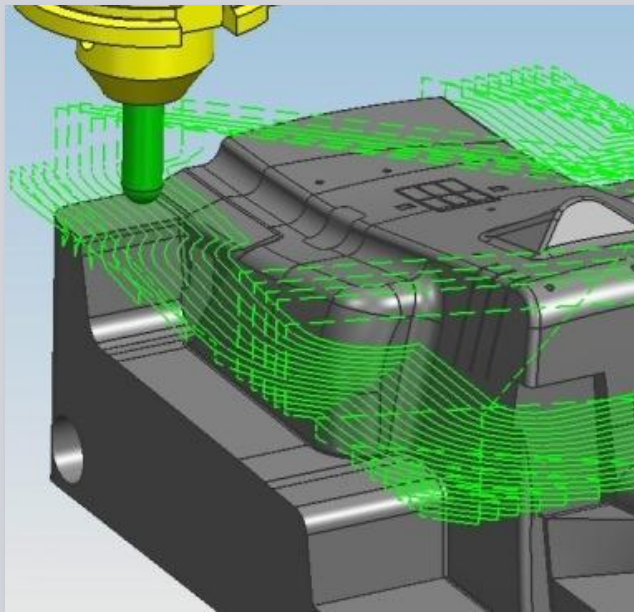
More Efficient 3 Axis Milling

How do I gain an advantage in the competitive tooling mfg business?

Siemens answers:

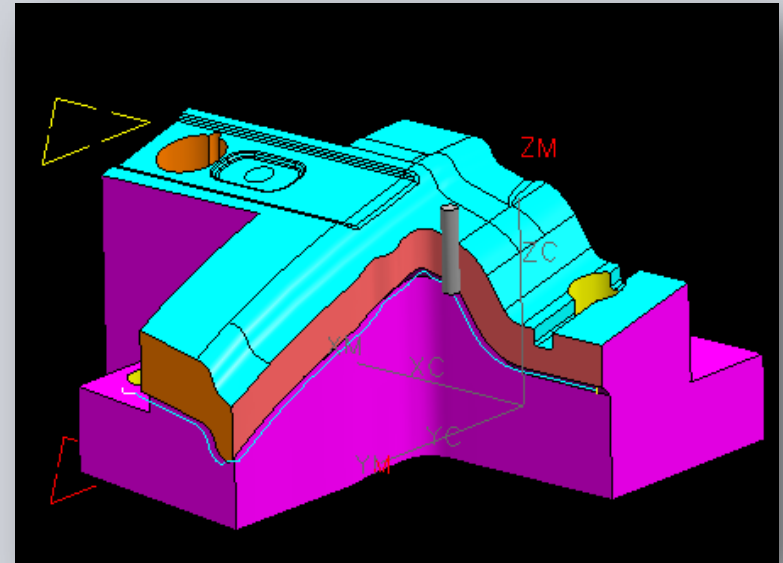
With the new 3axis enhancements of CAM Express 6 you can rough faster, finish finer, and utilize tools more effectively.

- Easily trace the solid with Curve/Edge operation and 2D/3D Profiling
- Rough faster with Optimized corner rounding
- Use the shortest tools possible with Graphical Toolpath editing
- Fit toolpath to contours with Streamline
- Achieve the smoothest results with point distribution

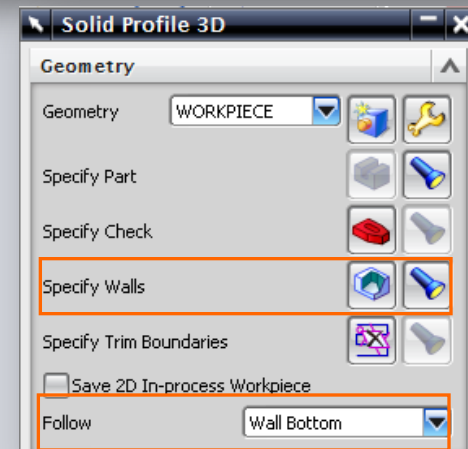


Solid Based Profile

- Users select vertical walls and request the tool trace either the top or bottom edge chain.
- Multiple Depths and Side Passes.
- Degouge against part.



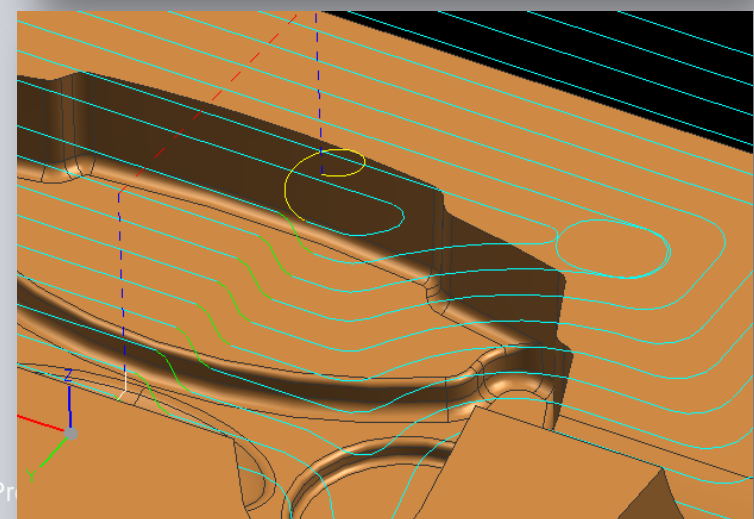
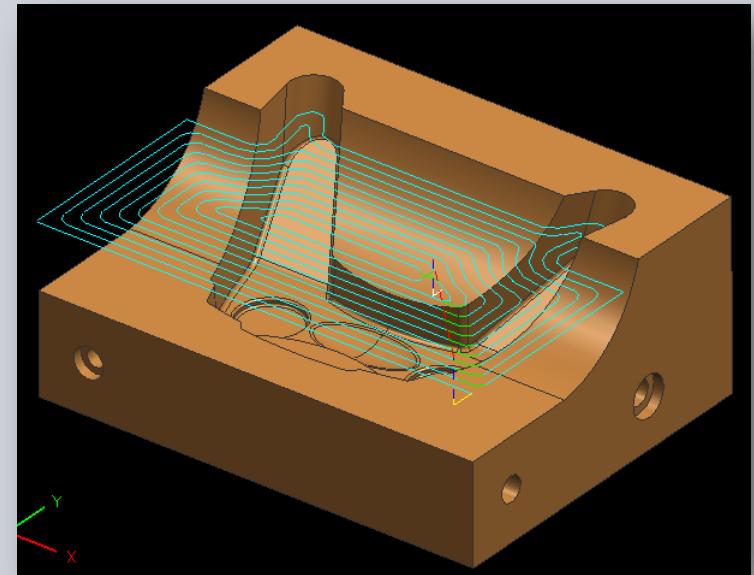
- **Ideal for cutting die components**
- **Faster, more accurate programming**
- **Solids approach stays associative**



Planar Pattern – Corner Rounding

- New Corner rounding
- Consistent, automatic results
- Loops as needed maintain climb cut
- S-connections or step-in at corner

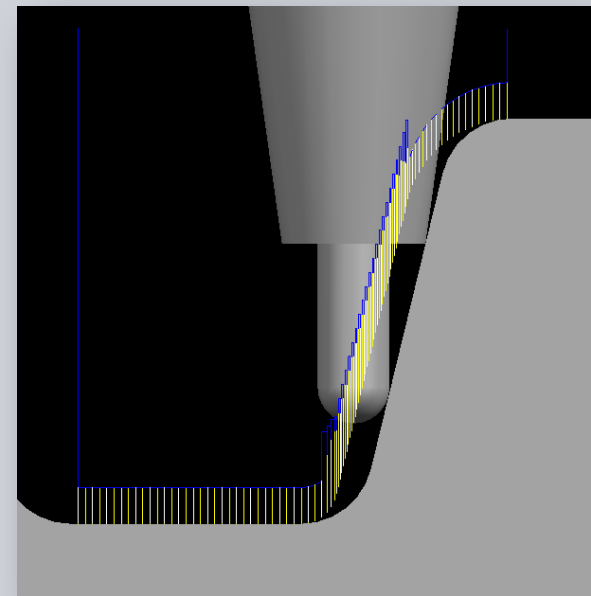
- **Faster cut times, as much as 10% depending on interpolation mode!**
- **Smoother machine operation**
- **Consistent chip loading maintained throughout.**



Toolpath editing – split by tool reach

- Full toolpath is subdivided by actual reach limitations
- Calculate once, subdivide into as many tools as needed to reach everywhere

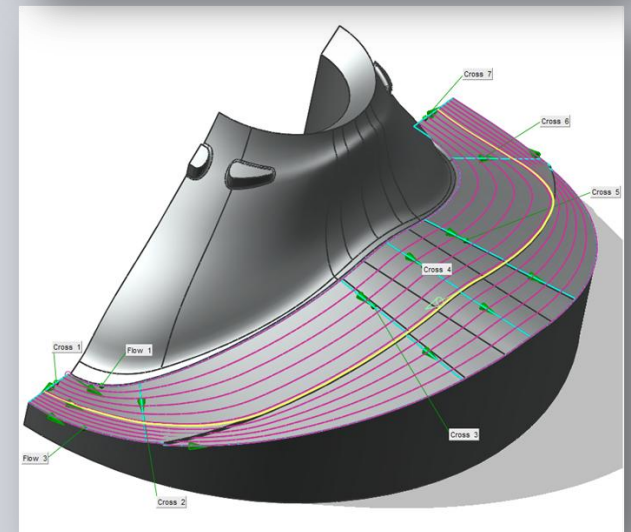
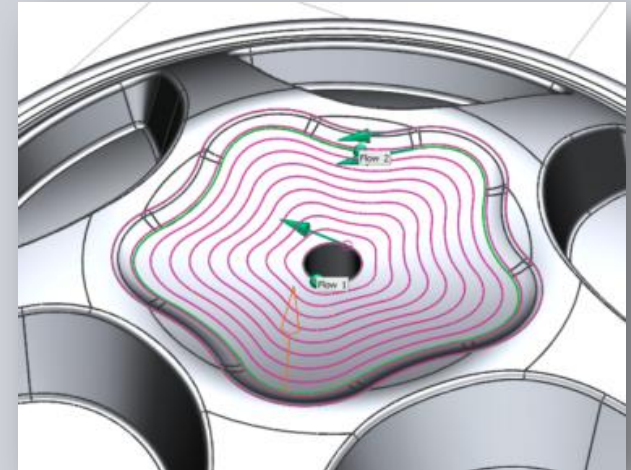
- **Actual reach limitations derived from solids**
- **Fast calculation of multiple tool reach sub-divisions**
- **Easy calculation encourages more work with shorter, more efficient tools.**



Streamline

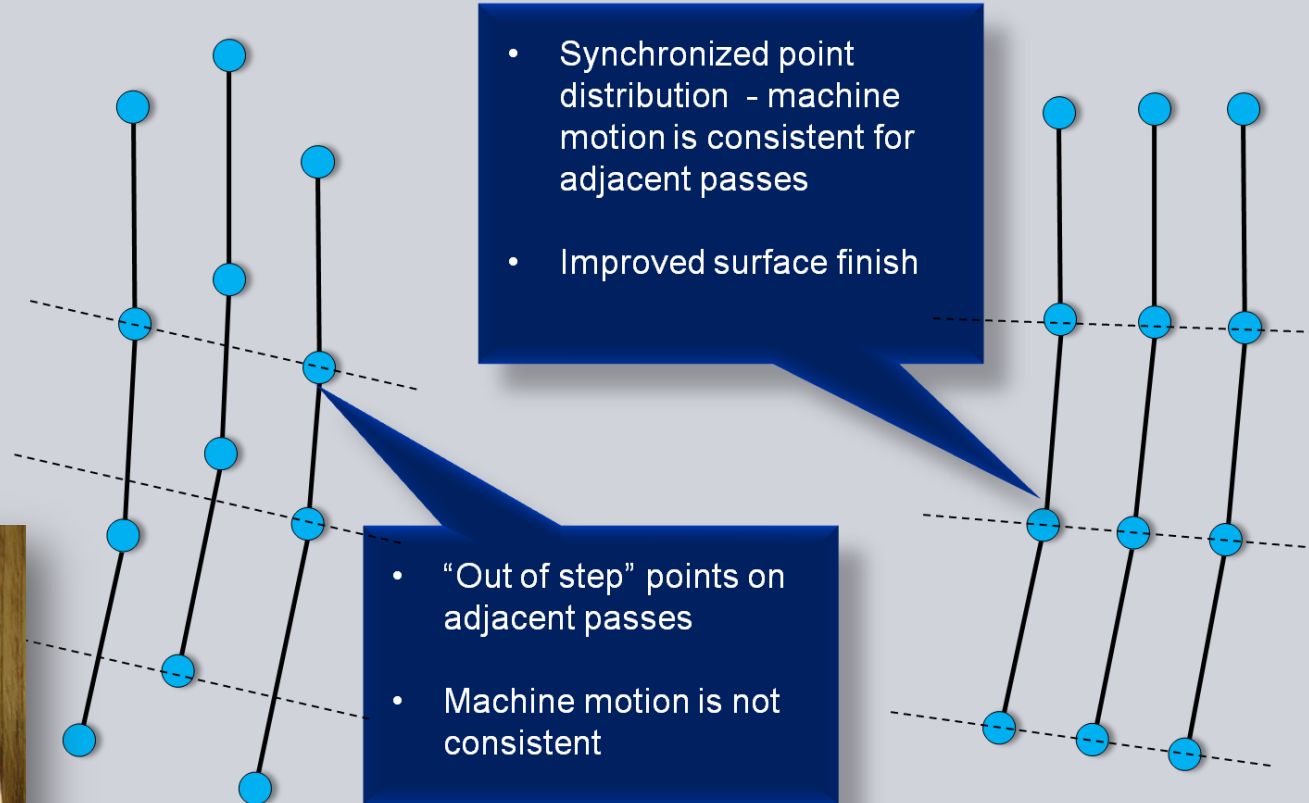
- **Flows across part contours, regardless of surface construction**
- Optimized boundary positions
- True Spirals
- **Automatic results, with available fine-tuning**
- Works with 3 axis or 5 axis cuts

• **Smooth flowing toolpath that molds to the contours of the part provide the best finished surfaces**



Point Distribution

- Reach beyond “acceptably in tolerance” to achieve the best surface finish possible.

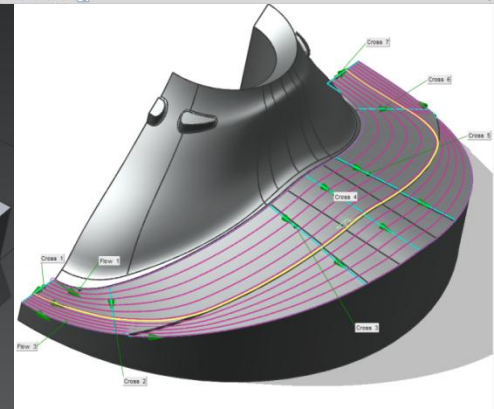
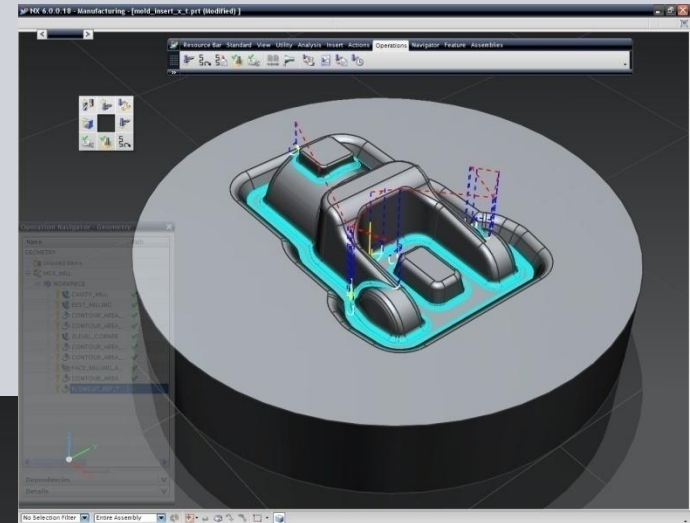
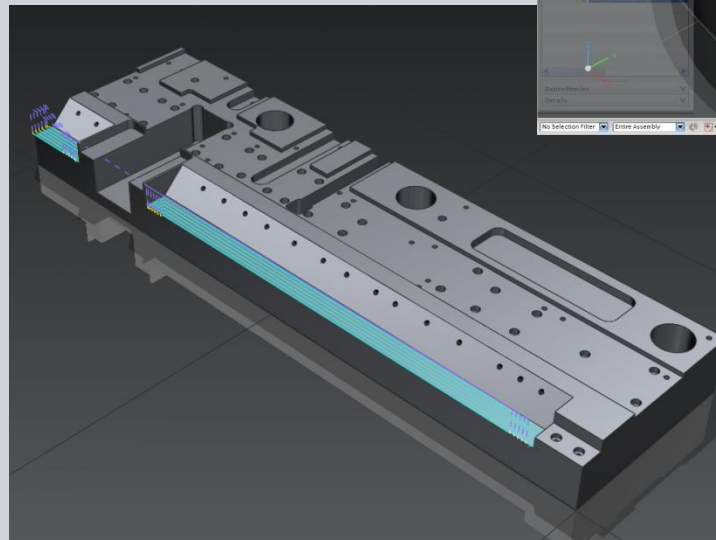


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“Improve performance with faster, smoother cutting strategies and enhanced feature recognition.”



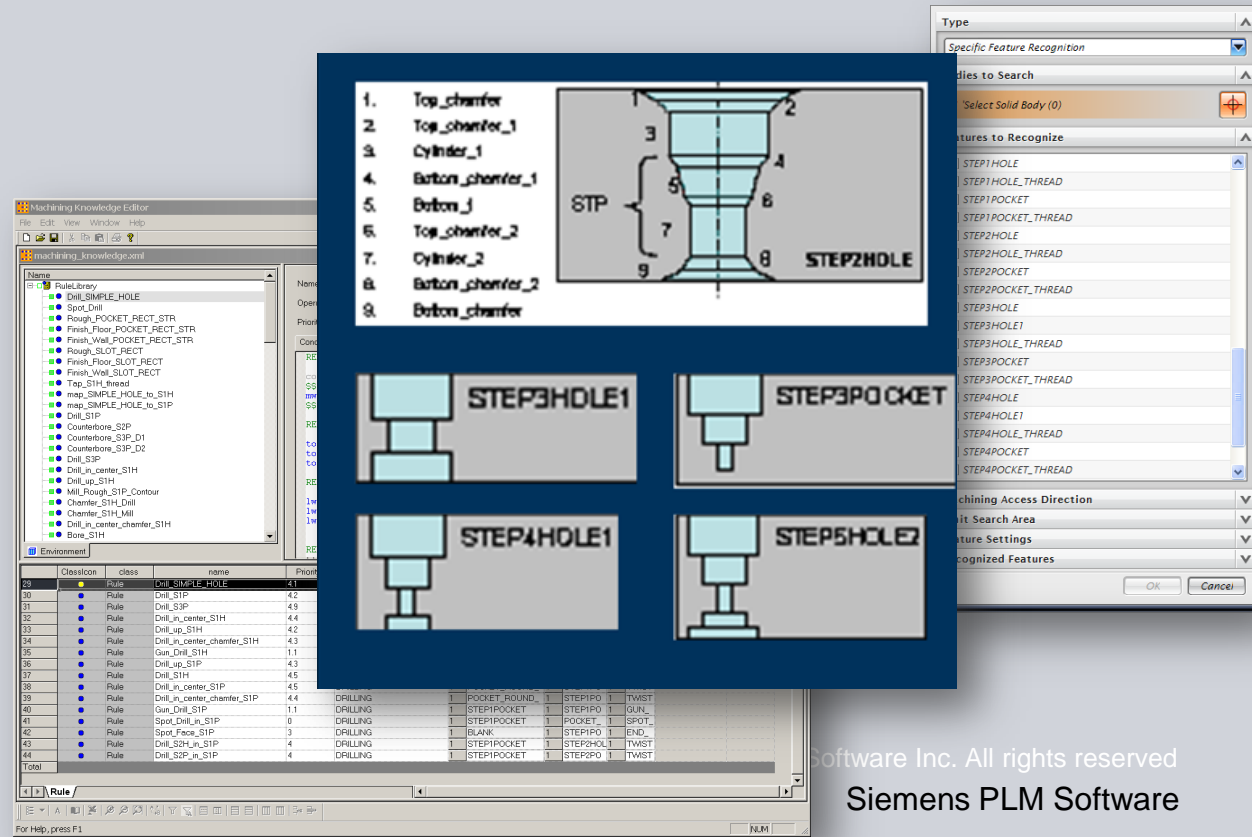
New Feature Based Machining from Tecnomatix

How do I make noticeable advances in my programming automation?

Siemens answers:

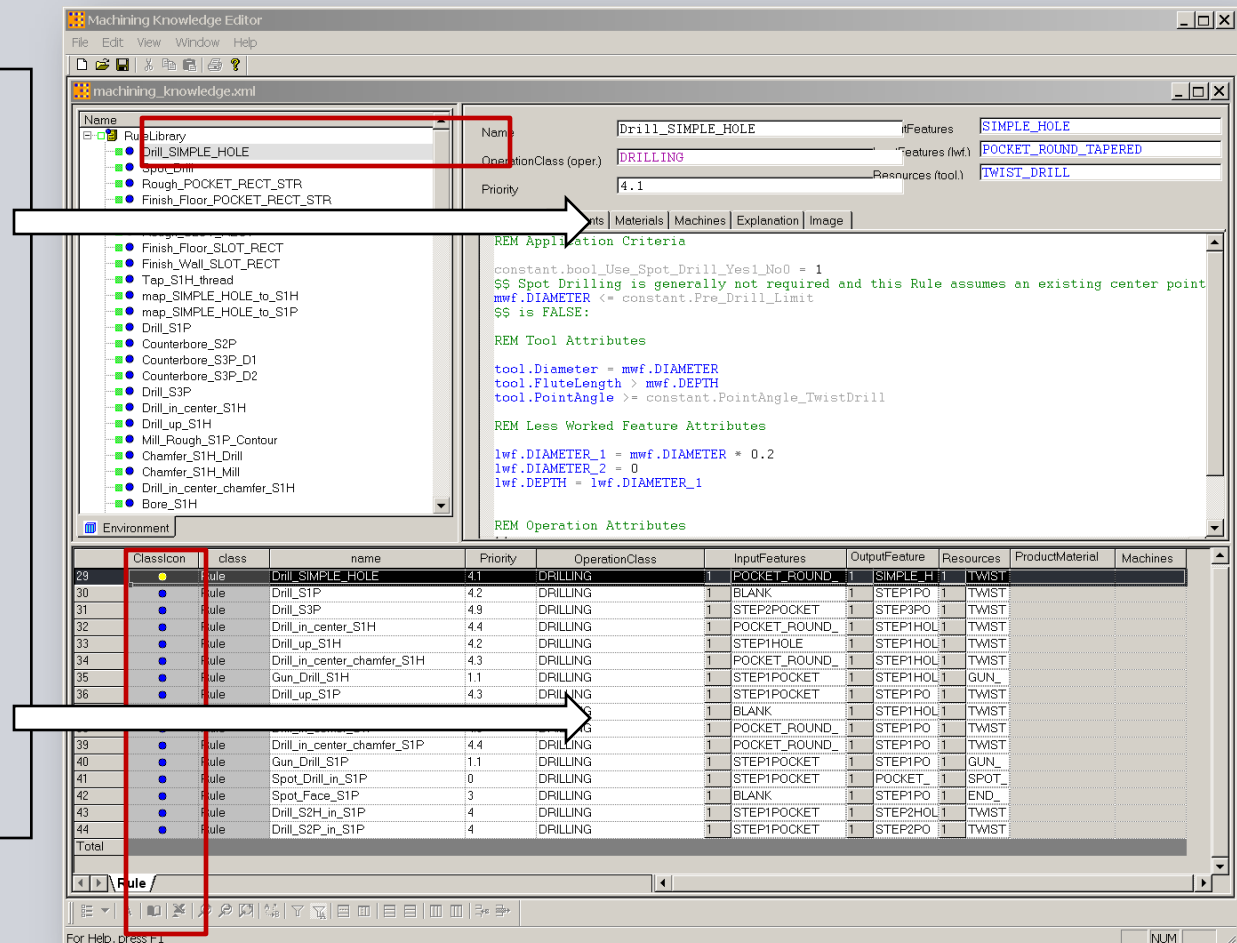
With the Tecnomatix feature machining technology in CAM Express 6 you can automate more features with more flexibility than ever.

- Process more features with expanded feature recognition methods
- Manage more processes with less maintenance and no coding with next generation of knowledge editor provides



Machining Knowledge Editor

- Incremental process steps are defined and organized in the Machining Knowledge Editor, without writing code or editing scripts!
- Building block approach means processes can be updated easily, with improvements reaching across any defined features.



Thank You

Mark Rief
Product Manager